

CLAIMS

I claim:

- 5 1. A system for eliminating emissions to the atmosphere of pollutant gases comprising carbon dioxide and other gases produced by a combustion process in a combustion system having an intake and an emission area, comprising:
- 10 a first mixing system wherein the pollutant gases being emitted from the emission area of the combustion system are mixed with water, dissolving part of the pollutant gases in water and forming a polluting gases and water mixture stream;
- 15 a reaction system in communication with the first mixing system wherein the carbon dioxide in the pollutant gases and water mixture stream coming from the first mixing system reacts with inorganic material at elevated temperatures to form carbonates, bicarbonates and water, the carbonates, bicarbonates and water being deposited in a chamber;
- 20 a second mixing system containing water in communication with the reaction vessel wherein the pollutant gases not reacted with the inorganic material in the reaction vessel are mixed with water, dissolving part of the polluting gases in the water;
- a return passage wherein the pollutant gases not dissolved are returned from the second mixing system to the intake area of the combustion

system.

2. The system of claim 1, wherein the reaction system comprises a vessel with inorganic material and where the chamber is a mixing chamber, where inorganic material is sucked by the gases stream through a duct that connects the
5 inorganic material vessel to the duct that carries the polluting gases and water mixture stream, and the reaction between the inorganic material and polluting gases occurs in the mixing chamber, in which the carbonates produced are deposited.

3. The system of claim 2, wherein the polluting gases produced by
10 the combustion system are formed primarily of carbon dioxide, carbon monoxide, nitrogen oxides, sulfur oxides, and non-combusted hydrocarbons.

4. The system of claim 3, wherein carbon monoxide is recycled to the combustion system so that upon burning with an air and fuel mixture its combustion is completed, forming primarily carbon dioxide.

15 5. The system of claim 4, wherein part of the nitrogen oxides react with inorganic material to form nitrates and nitrites, which nitrates and nitrites are deposited in the mixing chamber.

6. The system of claim 5, wherein the nitrogen oxides that do not react with inorganic material are recycled to the combustion system to be used as
20 oxygen sources to enhance combustion in the combustion system.

7. The system of claim 6, wherein part of the sulfur dioxide reacts with inorganic material to form sulfites and water, the sulfites being deposited in the mixing chamber.

8. The system of claim 7, wherein part of the sulfur dioxide that does not react with inorganic material reacts with water to form primarily sulphurous acid.

9. The system of claim 8, wherein the inorganic material contained
5 in the inorganic material vessel is selected from the group that consists of oxides and hydroxides of Periodic Table of Elements groups IA and IIA metals.

10. The system of claim 9, wherein the inorganic material contained in the inorganic material vessel is selected from the group that consists of sodium hydroxide, potassium hydroxide, calcium hydroxide, lithium hydroxide, rubidium
10 hydroxide, cesium hydroxide, francium hydroxide, beryllium hydroxide, magnesium hydroxide, strontium hydroxide, barium hydroxide, radium hydroxide, oxides thereof, and mixtures thereof.

11. The system of claim 10, wherein the hydroxides contained in the inorganic material vessel are selected from the group that consists of sodium
15 hydroxide, potassium hydroxide, calcium hydroxide, and mixtures thereof.

12. The system of 11, wherein the first mixing system comprises a vessel filled with water in which the duct which carries the gas emissions stream is submerged in the water for the mixing to take place.

13. The of claim 11, wherein the first mixing system further
20 comprises a water injection system that injects water to the duct that carries the gas emissions stream, wherein the mixing is done in the duct by the gas stream turbulence.

14. The system of claim 1, wherein the system for eliminating

emissions is applied to an internal combustion motor of an automobile vehicle.

15. The system of claim 14, wherein the system for eliminating emissions has a continuous gas flow since the vacuum formed in the automobile vehicle's internal combustion motor sucks the gases inside the system at the time
5 that the gases generated by the automobile vehicle's internal combustion motor push the gases inside the system for eliminating emissions of gases.

16. The system of claim 1, wherein the system for eliminating emissions is applied to an industrial combustion process.

17. The system of claim 1, wherein the industrial combustion
10 process is a process from the group that consists of electric energy generation and steam generation in boilers processes.

18. The system of claim 1, wherein the system for eliminating emissions is applied to stationary motors, motor generators, motor compressors, nautical transports, trains and terrestrial transports.

15 19. The system of claim 1, further including an air admission pump, wherein the air supplied by the pump helps to improve the mixing of polluting gases with water and inorganic material.